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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant: Joseph Phillip Bigus et al.	Art Unit: 2762
Serial No.: 09/100,595	Examiner: Wilbert L. Starks, Jr.
Filed: June 19, 1998	Atty. Docket No.: IBM/04B
For:	

OPTIMIZING THE PERFORMANCE OF COMPUTER TASKS USING
INTELLIGENT AGENT WITH MULTIPLE PROGRAM MODULES HAVING
VARIED DEGREES OF DOMAIN KNOWLEDGE

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Assistant Commissioner for Patents
ATTENTION: Board of Patent Appeals and Interferences
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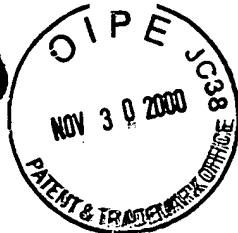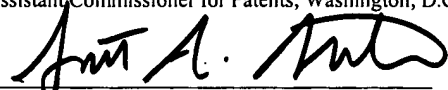Transmittal for Reply Brief
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REPLY BRIEF

This paper is submitted in reply to the Examiner's Answer filed September 26, 2000 in connection with the appeal for the above-identified patent application. As the two month period for response expires on a Sunday, the period for response extends up to and includes November 27, 2000. Reversal of the Examiner's rejections is respectfully requested.

Applicants are of the belief that the Appeal Brief adequately addresses the points at issue. However, Applicants feel it necessary to correct the Examiner's continuing misunderstandings as to the invention and the prior art, as well as the Examiner's misapplication of the case law in the Examiner's Answer.

The Examiner states at page 22 of the Examiner's Answer that the "statements made herein are only the solitary reflections of the Examiner." With all due respect to the Examiner, this statement is ironically very insightful as to the Examiner's overall approach throughout the prosecution history of this case. The examination is replete with inconsistent application of the case law, without any concern for precedence; claim analysis based on the "gist" of the invention, without any concern for the specific limitations of the claims; and art-based rejections incorporating excessively liberal use of inherency.

Throughout the course of this examination, the Examiner has insinuated to Applicants that the Examiner has a "gut feel" that the invention is not patentable. However, the Examiner has never produced any art that has any reasonable relevance to the invention. Applicants extensively searched the art prior to filing this application, and Applicants carefully considered

the applicable prior art in crafting the claims. Were the Examiner to apply the same careful analysis in examining the claims, the needless time and expense expended by both the Applicants and the Office in connection with this application could have been avoided.

Applicants will now briefly address a limited number of the Examiner's arguments made in the Examiner's Answer. Where applicable, Applicants have referred to the paragraph numbers utilized by the Examiner in the Examiner's Answer. It is Applicants' continued belief, however, that the Examiner has raised no points in the Answer that overcome the deficiencies in the Examiner's initial rejections. Accordingly, reversal of all outstanding rejections on Appeal is respectfully requested.

Paragraph II

With respect to Paragraph II, the Examiner asserts that "Applicant's representative argues, in substance *that the selection of which subroutine in a computer program should be run is "useful, concrete, and tangible" under the State Street standard set four by the Federal Circuit.*" Examiner's Answer, page 10 *(emphasis in original)*. The Examiner then states that "[i]n the present case, the computer programs themselves are abstractly disclosed and **the simple selection of one program over another** 'adds nothing to the basic equation.'" Id. *(emphasis in original)*.

The Examiner misstates Applicants' position. Applicants have consistently maintained that the "useful, concrete and tangible" result recited in the claims is the optimization of the operation of an intelligent agent to perform a computer task that includes conducting negotiations in an electronic commerce application. Essentially, Applicants' claimed method and apparatus provide the result of improving the performance of an intelligent agent in conducting electronic negotiations. The Examiner's argument that Applicants' invention is merely the selection of subroutines disregards the specific language in the claims that Applicants' contend is dispositive of the statutory subject matter issue.

Paragraph III

With respect to Paragraph III, at page 11 of the Examiner's Answer, the Examiner asserts that Applicants are incorrect in stating that "as to claims 49 and 64, these claims specifically recite the practical application of the claimed method and apparatus in "conducting negotiations in an electronic commerce application."" Examiner's Answer, page 12. The Examiner apparently takes the position that "the *actual* claim limitations are drawn to a "common computer task" that *incidentally covers* (i.e., "**includes**") the task of "conduction [sic] negotiations in an electronic commerce application."" Id. *(emphasis in original)*.

The Examiner apparently interprets the term "includes" to mean "incidentally covers", which flies in the face of long standing patent jurisprudence with respect to the term. *Hewlett-Packard Co. v. Repeat-O- Type Stencil Manufacturing*, 43 USPQ2d 1650, 1655 (Fed. Cir. 1997) *cert. denied* 118 S.Ct. 1384 (1998) ("The claim term 'including' is synonymous with 'comprising'; thereby permitting the inclusion of unnamed components"). It is Applicants' understanding that the term "includes", like the term "comprises", forms an open-ended limitation that, with respect to the language at issue, means that the common computer task *must* incorporate conducting negotiations, although other operations may also be incorporated into the task. There is nothing in the claims at issue that even remotely suggests that the common computer task need not incorporate conducting negotiations.

Moreover, Applicants note that the Examiner specifically cites *In re Warmerdam*, 31 USPQ2d 1754 (Fed.Cir. 1994), in rejecting the claims. Applicants believe, first, that *Warmerdam* has to some extent been rendered antiquated by the later decisions in *State Street Bank & Trust v. Signature Financial Group*, 47 USPQ2d 1596 (Fed. Cir. 1998) and *AT&T v. Excel Communications*, 50 USPQ2d 1447 (Fed. Cir. 1999), as neither of these cases chose to rely on the line of reasoning set forth in this earlier case. Neither case, being panel decisions, could expressly overrule *Warmerdam*. Nonetheless, *State Street* cites *Warmerdam* only for the proposition that the issue of statutory subject matter is but one of many requirements for patentability. *AT&T* attempts to briefly reconcile its holding with *Warmerdam,* but clearly places

little or no weight on the *Warmerdam* panel's application of law to the facts. *See AT&T*, at 1453 ("Whether one agrees with the court's conclusion on the facts . . ."). In short, it appears that the reasoning applied in *Warmerdam* has been superceded by the "concrete, useful and tangible" result test applied in the later cases. As discussed in Applicants' Appeal Brief, the claims are statutory under the rules of law set forth in these later cases.

Second, and of particular interest, the Examiner relies on *Warmerdam* to specifically reject the apparatus claims at issue (claims 64-74 and 76-77), when in fact the case can be read to stand for precisely the *opposite* proposition to that being asserted by the Examiner. In particular, *Warmerdam* distinguishes a machine claim (claim 5) from the rejected method claims, when the claim recites nothing more than a machine "having a memory which contains data representing a bubble hierarchy generated by the method of any of claims 1 through 4" *Warmerdam*, at 1757. The court in *Warmerdam* summarily dismissed the statutory subject matter issue, stating that "[c]laim 5 is for a machine, and is clearly patentable subject matter." *Id.,* at 1759.

Claim 64 of the instant case likewise recites, in part, an apparatus comprising "a memory; and an intelligent agent resident in the memory. . ." Simply based on the reasoning of *Warmerdam,* the recitation of an "apparatus" that comprises a "memory" in claim 64 seems to render the claim statutory without any need for further analysis. However, much as with the Examiner's overall approach to claim interpretation, the Examiner appears to excerpt disjoint but convenient snippets from the case law without any careful analysis of the complete holdings of the cases.

Paragraph IV

The Examiner next discounts Applicants' recitation of "risk" in claim 78, stating that:

> Applicant "determines" the "risk" in a remote computer, "optimizes an intelligent agent" and cites this as a useful, concrete and tangible use. The thing that is missing in the claim is the **kind** of risk that is claimed. Each kind of risk has its own algorithmic embodiment. Applicant merely discloses the **idea** of risk in this claim. Is it the risk associated with rising and falling values of currencies or

commodities? Is it the risk associated with deceptive trading practices? Is it the risk associated with the other traders' credit worthiness? Is it the risk that private information could be disclosed? No limitation in Applicant's claims addresses these pertinent questions. If Applicant's answer to all of these questions is "yes" then it is clear that no particular risk limitation is intended. Examiner's Answer, pages 12-13 *(emphasis in original)*.

To the contrary, since each possible interpretation of the term "risk" proposed by the Examiner constitutes a "useful, concrete and tangible" result, Applicants contend that the claim would be statutory even if the term was, in fact, that broad.

However, the usage of the term throughout the Application is consistent, whereas risk is clearly intended to refer to a risk of compromise or fraud. Claims are not read in a vacuum. "It is entirely proper to use the specification to interpret what the Patentee meant by a word or phrase in the claim." *Du Pont v. Phillips Petroleum Co.*, 7 USPQ2d 1129, 1131 (Fed. Cir. 1988), citing *Loctite Corp. v. Ultraseal Ltd.*, 228 USPQ 90, 93 (Fed. Cir. 1985).

Applicants continue to maintain that configuring an intelligent agent responsive to the determination of a risk of compromise or fraud represents a "useful, concrete and tangible" result. Given that the meaning of this term is clear from a reading of the specification, the Examiner's attempt to read this term out of the analysis is in error.

Moreover, Applicants are unclear as to the purpose of the Examiner's argument in this regard. The Examiner's apparent objection to the term "risk" seems to mean more akin to an indefiniteness rejection. If the Examiner considers Applicants' usage of the term to be indefinite, it would appear that the proper rejection would be under 35 U.S.C. § 112, second paragraph, and not under 35 U.S.C. § 101. As it is, the Examiner's apparent objection to the Applicants' usage of the term appears to be irrelevant to the statutory subject matter at issue.

Paragraph X

Rather than addressing Applicants' analysis under the more recent cases of *State Street* and *AT&T*, the Examiner proposes an alternate analysis in the Examiner's Answer, relying on

Warmerdam and *Diamond v. Diehr* to require that "substances" be transformed to impart statutory subject matter to a claim. Applicants find two primary problems with the Examiner's analysis in this section.

First, the Examiner's proposed rule disregards the Federal Circuit's current approach, which requires analysis into whether the invention produces a "useful, concrete and tangible" result. *(See AT&T*, where the prior cases of *In re Schrader,* 30 USPQ2d 1455 (Fed. Cir. 1994), and *In re Grams,* 12 USPQ 2d 1824 (Fed. Cir. 1989), are distinguished for not applying the correct test). As Applicants have argued in the Appeal Brief, under the current test, Applicants' claims are statutory.

Second, based upon the Examiner's reasoning, it would appear that the *AT&T* claims wherein a PIC indicator is associated with the carrier of a terminating subscriber for a telephone call, would not be found statutory under the Examiner's proposed rule. In the least, Applicants submit that claim 78 of the instant application, which recites determining a risk, is at least as much of an operation performed on a "substance" as is the inclusion of a PIC indicator in the claims at issue in *AT&T.* Applicants can find no basis that would permit claim 78 to be found unstatutory without a direct conflict with the holding in *AT&T.*

Paragraph XIII

Next, the Examiner proposes a creative, but ultimately flawed analysis that concludes that neural networks are inherently statutory subject matter. The Examiner in particular states:

> The published examples regarding neural networks tend to regard them, in Examiner's opinion, as a special class where they are treated as "substances" that are statutory when they are *trained* or their **synapses** are *specially configured.* This is not so of *all* computer programs.

> In Examiner's opinion, neural networks inherently have ambiguous characteristics that cause them to straddle the substance/algorithm line (and hence, the legal line). While simply modeling actual neural systems, neural networks go further to operate in the real world **as** actual neural networks do.

How should the ambiguity be resolved?

Notice that the output of neural networks is a vector of **neural intensities** that is analogous to the **pixel intensities** in *Alappat*. The manipulation of data in an effort to arrive at these useful intensity patterns contributes to a finding of usefulness.

Furthermore, Since the training/configuration algorithms are so *narrowly applicable* to the configuration of **synapses** of the neurons to produce these neural intensities, that *narrow application* may be used as a **rational basis** to find enough of a *limited use* to resolve the conflict in favor of regarding them as special statutory subject matter -- in Examiner's opinion.

The inherent ambiguity of the neural network art, the structure that is analogous to a decided case (i.e., *Alappat*), and the inherent limited use of training/configuring the system all combine to justify a rational basis to treat neural networks as a special case of "substance". Understand, the USPTO has not yet stated much policy on this issue. The statements made herein are only the solitary reflections of the Examiner. Examiner's Answer, pages 21-22.

The Examiner essentially proposes a rule whereby how a program is implemented, rather than what the program does, is determinative of the statutory subject matter issue.

Such a rule, if applied in practice, would lead to interesting results, to say the least.

Specifically, it is well known that practically any mathematical function can be modeled using a neural network. However, under the Examiner's reasoning, the simple fact that a trained neural network is claimed would apparently in and of itself render a claim statutory, *regardless* of the mathematical function being implemented. Thus, a hypothetical claim that recited nothing more than calculating the area of a circle from its radius, using a neural network to implement the geometric equation $A=\pi r^2$, would be statutory under the Examiner's logic. But clearly, given that the "useful, concrete and tangible" result test is focused on the result of a program, rather than how it is implemented, the Examiner's reasoning cannot be adopted.

It is also interesting to note that the Examiner states that "Applicants' agents do not necessarily contain neural networks that are specifically trained or configured." Examiner's

<u>Answer</u>, pp. 22-23. Applicants direct the Board's attention to claim 67, which is specifically directed to a neural network.

<u>Paragraph XIV-XVII</u>

As discussed at the beginning of the Brief, the Examiner has consistently failed to carefully analyze the language of the claims in rejecting the claims. That the Examiner has devoted just three out of twenty-seven pages in the Examiner's Answer to the art-based rejections illustrates Applicants' point rather clearly.

The totality of the Examiner's arguments in response to Applicants' assertion of patentability over the prior art can be summed up in the passage at page 25 of the Examiner's Answer:

> Electronic commerce negotiation by agents is found in the primary reference, as Applicant admits in his brief:
>
> "Indeed, Atkins discloses at col. 34, lines 19-21 the use of interactive agents for negotiating" Applicant's Appeal Brief, page 12, second full paragraph, lines 2-3.

and

> Agents in such negotiations are inherently involved in a risky endeavour. The evolutionary system in the Mitchell textbook was used to show how agents react under such changes in their environments.

The Examiner is using classical hindsight reasoning, which is further notable in the context that the claims stand rejected under 35 U.S.C. § 102, and <u>not</u> 35 U.S.C. § 103.

The Examiner's first statement, that electronic commerce negotiation by agents is well known, would be relevant only if Applicants' claims were directed solely to conducting electronic commerce negotiations using agents. However, given that Applicants' claims are directed to optimizing the performance of agents in performing such negotiations through the

selection of program modules having varied degrees of autonomy (claims 30-32, 36-45, 47-60, 62-74 and 76-77) or domain knowledge (claims 78-80) renders Applicants' supposed admission to be meaningless in the overall context of the claims.

The Examiner's second statement, that agents are inherently involved in a risky endeavor, has no support on the record, and appears to be nothing more than the unsubstantiated opinion of the Examiner. And, even taking the Examiner's assertion on its face, the alleged conventionality of exposing agents to risk and conducting negotiations using agents still falls short of rendering Applicants' claims, where program modules of varied degrees of autonomy or domain knowledge are selected, unpatentable.

In short, the Examiner has provided absolutely no support for the art-based rejections. For this reason, Applicants respectfully submit that the Examiner's rejection of the claims based upon the prior art should be reversed.
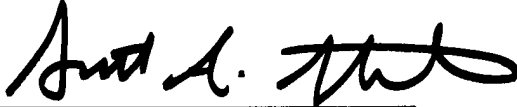
<div align="center">Conclusion</div>

In conclusion, Applicants respectfully request that the Board reverse the Examiner's rejections of claims 30-32, 36-45, 47-60, 62-74 and 76-80, and that the Application be passed to issue. If there are any questions regarding the foregoing, please contact the undersigned at 513/241-2324. Moreover, if any other charges or credits are necessary to complete this communication, please apply them to Deposit Account 23-3000.

Respectfully submitted,

WOOD, HERRON & EVANS, L.L.P.

Date: **27 NOV 2000**

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